

Claims

1. A data player and / or recorder (1) in which a reading and / or writing head (3) is positioned relatively to a data medium (2) comprising

- a driving mechanism (8, 6, 7) which allows to move the reading and / or writing head with an adjustable speed,
- a monitoring device (10) which allows to measure an instantaneous speed and position of the data reading and / or writing head,
- a calculator (13) for calculating a desirable head speed as a function of a position of the reading and / or writing head,
- a regulating circuit (9) for regulating the adjustable speed to the desirable head speed.

2. A data player and / or recorder in which a reading and / or writing head is positioned relatively to a data medium comprising

- a driving mechanism (33) which allows to move the data reading and / or writing head in steps of a determined steplength, a number of steps moved corresponding to an amount of energy provided to the driving mechanism,
- a monitoring device (35) which allows to measure an instantaneous position of the reading and / or writing head,
- a controller circuit (38) which outputs a quantified amount of energy to the driving mechanism which corresponds to a final number of steps separating the instantaneous position and a determined final position of the reading and / or writing head.

3. A data player and / or recorder in which a reading and / or writing head is positioned relatively to a data medium comprising

- a driving mechanism (33) which allows to move the data reading and / or writing head in steps,
- a monitoring device (35) which allows to measure an instantaneous position of the reading and / or writing head with at least a precision corresponding to a movement of one step,
- a power regulating device (50) which outputs energy to the driving mechanism, an amount of power being increased until the driving mechanism moves the data reading and/or writing head by one step, and the amount of power being reduced afterwards.

4. A data player and /or recorder according to claim 1, in which the driving mechanism allows to move the data reading and / or writing head in steps of a determined steplength, a number of steps moved corresponding to an amount of energy provided to the driving mechanism, the data player and / or recorder further comprising
 - A controller circuit (38) which outputs a quantified amount of energy to the driving mechanism which corresponds to a final number of steps separating the instantaneous position and a determined final position of the reading and / or writing head.
5. A data player and / or recorder according to claim 4, characterized in that the monitoring device measures with at least a precision corresponding to a movement of one step and in that it further comprises a power regulating device (50) which outputs energy to the driving mechanism, an amount of power being increased until the driving mechanism moves the data reading and / or writing head by one step, and the amount of power being reduced afterwards.
6. A data player and / or recorder according to claim 1, characterized in that the driving mechanism moves the data reading and / or writing head in steps of a determined steplength.
7. A data player and / or recorder according to anyone of claims 2 to 6, characterized in that the monitoring device comprises an encoder (34) which delivers a fixed number of encoder signals for each step by which the data reading and / or writing head moves.
8. A data player and / or recorder according to anyone of claims 1 to 7, characterized in that the desirable head speed is proportional to a square root of a remaining distance separating the data reading and / or writing head from a determined final position.
9. A data player and / or recorder according to anyone of claims 1 to 8, characterized in that the adjustable speed is limited to a maximum speed and in that the regulating circuit regulates the adjustable speed to the maximum speed if the maximum speed is smaller than the desirable head speed.

10. A data player and /or recorder in which a reading and / or writing head is positioned relatively to a data medium carrying data tracks, such that the data tracks may be followed by the reading and / or writing head, comprising

- a driving mechanism which allows to move the reading and / or writing head in steps,
- a fine positioning mechanism which allows to position the reading and / or writing head with a precision greater than one of said steps without activating the driving mechanism,
- a power regulating device which outputs energy to the driving mechanism, an amount of power being increased until the driving mechanism moves the reading and / or writing head by one step, and the amount of power being reduced afterwards,
- a correlating circuit which outputs a signal to the power regulating device depending on a state of the fine positioning mechanism.

11. A data player and / or recorder in which a reading and / or writing head is positioned relatively to a data medium comprising

- a slider (60) to move the reading and / or writing head,
- a pulse width modulation unit (68),
- power stages (69) which at an input receive a pulse width modulated signal from the pulse width modulation unit and at an output deliver electrical power to the slider,
- an encoder (61) comprising a wheel (70) having a determined number of holes (72, 721, 722) and which turns when the slider is moved, and a light barrier part (73) which shines and measures light through the holes, thereby outputting encoder signals (62, 63, SIA, SIB),
- a timer unit (67) which receives encoder signals from the encoder,
- a microcomputer (64) which receives encoder signals from the encoder and from the timer, and sends control signals to the pulse width modulation unit in order to adjust a speed of the slider.

12. A data player and / or recorder according to claim 11, wherein the timer unit comprises a logical XOR gate (65) and the light barrier part comprises at least two independent sensors (SA, SB) delivering encoder signals (SIA, SIB) to the XOR gate and to the microcomputer.

13. A method for positioning a data reading and / or writing head in a data player and / or recorder from a first position (A ; 27) to a second position (B ; 24) comprising
 - calculating (25) a desirable head speed (V_{des}) for the data reading and / or writing head for intermediate positions between the first and the second position,
 - measuring an instantaneous position (27) and speed (31) of the data reading and / or writing head while the latter is moved from the first towards the second position,
 - regulating (32) a speed of the data reading and / or writing head to the desirable head speed.
14. A method for positioning from a third position (44) to a second position (41) a data reading and / or writing head in a data player and / or recorder using a step motor which moves the reading and / or writing head in steps, comprising
 - calculating (42) a final number of steps (43) which separate the third position from the second position,
 - outputting (46) to the step motor a quantified amount of energy which corresponds to the final number of steps to be moved.
15. A method for positioning according to claim 14 further comprising
 - determining a near position (44) of the reading and / or writing head after the outputting of the quantified amount of energy,
 - calculating (42) a last number of steps which separate the near position from the second position,
 - outputting (46) to the step motor a second quantified amount of energy which corresponds to the last number of steps to be moved if the last number is greater than a predetermined value.
16. A method for positioning a data reading and / or writing head in a data player and / or recorder using a motor which moves the reading and / or writing head in steps, comprising
 - increasing (57) an amount of power at an input of the step motor until (58) the motor performs one step,
 - decreasing (59) the amount of power afterwards.

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17. A method for positioning according to claim 13, further comprising

- moving the reading and / or writing head in steps,
- stopping the regulating once the data and / or writing head has reached the second position,
- determining a third position of the reading and / or writing head,
- calculating a final number of steps which separate the third position from the second position,
- outputting to the motor a quantified amount of energy which corresponds to the final number of steps to be moved.

18. A method for positioning according to claim 17, further comprising

- determining a near position of the reading and / or writing head after the outputting of the quantified amount of energy,
- calculating a last number of steps which separate the near position from the second position,
- outputting to the motor a second quantified amount of energy which corresponds to the last number of steps to be moved if the last number is greater than a predetermined value.

19. A method for positioning according to anyone of claims 17 or 18, further comprising

- increasing an amount of power at an input of the motor until the motor performs one step if the instantaneous position is different from the second position,
- decreasing the amount of power afterwards,
- repeating the increasing and the decreasing until the instantaneous position is substantially the second position.